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CLAIM AMENDMENTS

Claim 1. (Amended) A microfluidic device formed from a substrate, said device comprising a plurality of individual units in said substrate, each individual unit comprising 4 ~~assay units~~ subunits, where the 4 ~~assay units~~ subunits have 4-fold symmetry, said units further characterized by:

a common ~~reagent source~~ supply reservoir containing a target compound for said 4 ~~assay units~~ subunits; and

each subunit comprising:

a compound reservoir containing a test compound;

a delivery channel connecting with both the common supply reservoir and the compound reservoir such that the test compound and the target compound form an assay mixture when such test compound and target compound are transported through the delivery channel;

~~two waste sources for each assay unit, each waste source shared by two assay units;~~

~~each assay unit having a delivery channel and~~ an assay channel connecting a buffer reservoir and a waste reservoir and crossing the delivery channel to form ~~at~~ a cross-intersection for injecting ~~an~~ the assay mixture from ~~said~~ the delivery channel into ~~said~~ the assay channel, the assay mixture being transported along the assay channel toward the waste reservoir for detection.~~; and~~

~~a plurality of reservoirs for providing buffer, receiving waste and, as required, providing additional reagents.~~

Claim 2. (Canceled)

Claim 3. (Amended) A microfluidic device according to Claim 1, wherein said common ~~reagent source~~ supply reservoir comprises a PCR reactor, a bead reservoir and buffer reservoir.

Claim 4. (Original) A microfluidic device according to Claim 1, wherein said substrate is plastic.

Claim 5. (Amended) A microfluidic device according to Claim 1, having at least about 96 assay ~~units~~ channels.

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Claim 6. (Canceled)

Claim 7. (Original) A microfluidic device according to Claim 1, wherein said cross-intersection is a double-T intersection.

Claim 8. (Amended) A microfluidic device formed from a substrate, said device comprising a plurality of individual units in said substrate, each unit comprising 8 single assay units, where the 8 assay units have 8-fold symmetry, said units further characterized by:

a common ~~reagent source~~ supply reservoir containing a target compound for said 8 assay units;

each assay unit comprising:

a compound reservoir containing a test compound;

a delivery channel in fluid communication with both said common supply reservoir and said compound reservoir, such that a test compound and a target compound form an assay mixture when such test compound and target compound are transported through the delivery channel;

~~two waste sources for each assay unit, each waste source shared by two assay units;~~

~~each assay unit having a delivery channel and~~ an assay channel fluidly connecting a buffer reservoir and a waste reservoir and crossing the delivery channel to form ~~at~~ a cross-intersection for injecting ~~an~~ the assay mixture from ~~said~~ the delivery channel into ~~said~~ the assay channel, the assay mixture being transported along the assay channel toward the waste reservoir for detection; and

~~a plurality of reservoirs for providing buffer, receiving waste, and, as required, providing additional reagents;~~

electrodes associated with a plurality of reservoirs operatively connected to a computer.

Claim 9. (Original) A microfluidic device according to Claim 8, wherein said delivery channel and said assay channel differ in at least a portion of said channels in cross-section.

Claim 10. (Amended) A microfluidic device according to Claim 8, ~~wherein said assay units of said microfluidic device are spatially organized to conform with a 96 or 384 microtiter well plate~~ comprising 96 assay channels.

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Claim 11. (Original) A microfluidic device according to Claim 8, wherein said cross-intersection is a double-T intersection.

Claims 12-15 (Canceled)

Claim 16. (New) A microfluidic device according to Claim 1, comprising 12 of said units.

Claim 17. (New) A microfluidic device according to Claim 8, comprising 384 assay channels.

Claim 18. (New) A method for performing multiple assays, each assay involving a target compound and a test compound, in a microfluidic device comprising a plurality of individual units having (a) a common supply reservoir containing the target compound, (b) four separate subunits having 4-fold symmetry, each subunit comprising a compound reservoir containing the test compound, a delivery channel connecting with the supply reservoir and the compound reservoir, and an assay channel connecting a buffer reservoir and a waste reservoir and crossing the delivery channel to form a cross-intersection, said method comprising:

combining the target compound with the test compound in the delivery channel to form an assay mixture that produces a product;

injecting the assay mixture from the delivery channel into the assay channel at the cross-intersection;

transporting the assay mixture through the assay channel; and

detecting the product, thereby performing multiple assays.

Claim 19. (New) A method according to Claim 18, wherein a control assay is performed in at least one said assay channel within said unit.

Claim 20. (New) A method according to Claim 18, wherein said target compound is an enzyme.